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Comment Letter G535

NRDC
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NATURAL RESOURCES DEFENSE COUNCIL

Via U.S. Mail, Facsimile and Electronic Mail

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Re Comments on DEIS/EIR for the Cabrillo Liquefied Natural Gas Deepwater Port; Federal Docket #: USCG-2004-16877, State Clearinghouse #2004021107

To Whom it May Concern:

We write on behalf of the Natural Resources Defense Council (NRDC) and our over 550,000 members, tens of thousands of whom reside in Southern California, to strongly urge the United States Coast Guard (USCG), the United States Maritime Administration (MARAD), and the California State Lands Commission (CSLC) to revise the draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) for the Cabrillo Liquefied Natural Gas (LNG) Deepwater Port (the Project), and allow the public sufficient time to provide written comments and testimony at a public hearing regarding the revised document. In addition, we reiterate our comments expressed in the attached December 8, 2004 letter, and repeat our call for a suspension of the Deepwater Port Act timeline for the Project in order to allow government agencies adequate time to gather essential information missing from the DEIS/EIR. G535-1

Here, the DEIS/EIR was prepared to fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). NEPA has twin aims. "First, it places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action. Second, it ensures that the agency will inform the public that it has indeed considered environmental concerns in its decisionmaking process." *Baltimore Gas & Electric Co., v. NRDC*, 462 U.S. 87, 97 (1983); *Robertson v. Methow Valley Citizens Council*,. 490 U.S. 332 349-50 (1989) (an EIS serves an "informational role" and provides a "spring board for public comment"). Similarly, the G535-2

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G535-1
All deepwater port applications fall under the authority of the Deepwater Port Act, which requires that a decision on the application be made within 330 days of the publication of the Notice of Application in the Federal Register. The Notice of Application for the Cabrillo Port Project was published in the Federal Register on January 27, 2004. Although the comment period (53 days) could not be extended at that time, a March 2006 Revised Draft EIR was recirculated under the CEQA for an additional public review period of 60 days. Section 1.4.1 contains additional information on this topic.

Section 1.5 contains information on opportunities for public comment. After the MARAD final license hearing, the public will have 45 days to comment on the Final EIS/EIR and the license application. The Federal and State agencies will have an additional 45 days to provide comments to the MARAD Administrator. The Administrator must issue the Record of Decision within 90 days after the final license hearing. The CSLC will hold a hearing to certify the EIR and make the decision whether to grant a lease. The California Coastal Commission will also hold a hearing. Comments received will be evaluated before any final decision is made regarding the proposed Project.

G535-2
A Revised Draft EIR was recirculated in March 2006 under the CEQA for an additional public review period of 60 days. Sections 1.4 and 1.5.3.2 contain additional information on this topic. Section 1.4.2 contains a summary of Project changes since issuance of the October 2004 Draft EIS/EIR and the March 2006 Revised Draft EIR.

Section 4.6.1.3 contains revised information on Project emissions and proposed control measures. Section 4.6.4 discusses the health effects attributed to air pollutants and includes revised impacts and mitigation measures.

Impact BioMar-5 in Section 4.7.4 contains updated information on potential noise impacts on the marine environment and mitigation measures to address such impacts.

See also responses to 2004 Comment Letter G437 herein.

basic purpose of an EIR under CEQA, "is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made." *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 564 (1990). G535-2 (cont'd)

The proposed Project includes the construction and operation of a new offshore LNG floating storage and regasification unit (FSRU), offshore and onshore pipelines, and related onshore facilities. After carefully reviewing the DEIS/EIR, we are deeply concerned that the document fails to fulfill its role as an "informational document" under NEPA and CEQA. *See, e.g, Baltimore Gas & Electric*, 462 U.S. at 97; *Napa Citizens for Honest Government v. Napa County Board of Supervisors*, 91 Cal. App. 4th 342, 360 (2001). In particular, the DEIS/EIR fails to adequately consider and disclose the significant air quality impacts generated by the proposed project, or mitigate those significant impacts. The document is also deficient in its analysis of ocean noise caused by the Project, failing, in particular, to adequately consider and disclose project impacts, including cumulative impacts, or to mitigate those impacts. Moreover, we are concerned by the numerous deficiencies in the DEIS/EIR discussed in the comment letter submitted to you by the Environmental Defense Center (EDC), and we incorporate EDC's comments herein.

Our concerns are especially strong because, as you know, this is the first DEIS/EIR created for an LNG import facility in California and, most importantly, the first environmental review of its kind in the world for an offshore LNG project. The informational role of this document therefore takes on special importance, and it is critical that it contain all the information and analysis essential to making an informed decision about moving forward.

I. The DEIS/EIR Fails to Analyze or Mitigate Adequately Impacts to Marine Resources from Ocean Noise G535-3

A. The Importance of Ocean Noise Impacts

As acknowledged in the DEIS/EIR, both the construction phase and the ongoing operations phase of the proposed project will generate considerable underwater noise. DEIS/EIR 4.7-51 *et seq.* Noise has quickly become a ubiquitous form of marine pollution, especially in the coastal waters of developed countries. Intense underwater sound is generated by oil exploration, seismic air guns, ship traffic, underwater explosives, high-powered sonar, anti-predator devices, shoreline and offshore development, and a host of other commercial, military, and industrial sources. It is now understood that humans threaten a broad range of species through the introduction of acoustic energy into the oceans and seas.

Over the last ten years, an accumulating body of evidence has shown that the energy generated by these sources of noise can kill and physically injure marine mammals, fish, and other ocean life. Noise pollution can cause marine mammals to abandon their habitat or alter their behaviors, and can mask natural sounds, such as the calls of mates and predators, that may be critical for them to hear. Several dramatic and widely-reported mass beaked whale strandings in recent years associated with high-energy sonar have shown that noise pollution can also cause more direct mortality of marine mammals. Studies also suggest that intense noise may cause similar effects, including habitat abandonment, in a variety of

G535-3
Thank you for the information. While we concur with the data presented regarding the potential impacts of the use of "air guns" during seismic surveys, the proposed Project does not propose the use of such equipment.

Impact BioMar-3 and BioMar-5 in Section 4.7.4 and Section 4.20.3.7 contains information on baseline underwater noise conditions and noise impacts on marine mammals, fish and other marine biota.

commercially harvested species of fish and may be linked to giant squid and snow crab mortality.

G535-3 (cont'd)

Because of their known sensitivity to sound, marine mammals have been the focus of much of the current research. The acute effects of acoustic pollution on marine mammals are varied and include:

- mortality or serious injury caused by hemorrhaging of tissues in lungs, air cavities, or other structures of the body;
- mortality or serious injury caused by the possible formation of nitrogen bubbles in the bloodstream, leading to embolism;
- stranding in shallow water or beaching caused by these or other effects, such as aversive reactions;
- temporary or permanent loss of hearing, which impairs an animal's ability to communicate, avoid predators, and detect and capture prey;
- avoidance behavior, which can lead to abandonment of habitat or migratory pathways, energetic consequences, and disruption of mating, feeding, nursing, or migration;
- aggressive (or agonistic) behavior, which can result in injury;
- masking of biologically meaningful sounds, such as the call of predators or potential mates; and
- declines in the availability and viability of prey species, such as fish and shrimp.[1]

Although most research to date has been devoted to marine mammals, ocean noise is a problem whose impacts may be ecosystem-wide. Fish, in particular, have been the subject of considerable recent interest. In one series of studies, scientists from Australia and the United States demonstrated that airguns (a technology commonly used in offshore oil exploration) can cause extensive and apparently irreversible damage to the inner ears of fish. This damage, which was severe enough to compromise survival, was seen even at exposure levels that might occur several kilometers from a source.[2] Studies have also suggested strong behavioral reactions in fish. A Norwegian study, for example, saw catch rates of cod and haddock fall dramatically (between 45 and 70%) in the vicinity of an airgun array,

[1] For a review of research on impacts of undersea noise, see, *e.g.*, NRC, *Ocean Noise and Marine Mammals*; and Evans, P.G.H. and L.A. Miller, eds., Proceedings of the Workshop on Active Sonar and Cetaceans at the European Cetacean Society's 17th Annual Conference (2004).

[2] McCauley, R., J. Fewtrell, and A.N. Popper, "High intensity anthropogenic sound damages fish ears," *Journal of the Acoustical Society of America* 113 (2003): pp. 638-42; *see also* McCauley, R. *et al.*, Marine seismic surveys: analysis and propagation of air-gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid (Perth: Curtin University Centre for Marine Science and Technology, 2000). In a separate study commissioned by the British Defense Research Agency, fish exposed to loud, low-frequency sounds suffered internal injuries, eye hemorrhaging, auditory damage, and death. The most sensitive subjects were brown trout (*salmo trutta*), a close relative of 26 endangered and threatened steelhead and salmon species: internal injuries were demonstrated at levels above 160 decibels. Turnpenny, A.W.H., K.P. Thatcher, and J.R. Nedwell, The Effects on Fish and Other Marine Animals of High-Level Underwater Sound (Southampton: Fawley Aquatic Research Laboratories, 1994).

affecting fishermen across an area nearly 5000 square kilometers in size. Catch rates did not recover within five days after operations ended.[3]

G535-3 (cont'd)

Sources of noise most relevant to this project include commercial ship traffic and construction activities. The chief source of noise on most commercial vessels is the ship's propeller, which at a certain speed causes the water around it to cavitate, producing loud, broadband noise. In many parts of the world – and especially in the Northern hemisphere where shipping is heaviest – that noise dominates the low frequencies below 600 Hz.[4] The acoustic energy produced by a ship generally increases in proportion to its size, its load, its speed, and its age, and ships can produce underwater sounds in the range of 190 dB. Among the leading sound producers are the oil tanker and bulk dry ship, which, though responsible for less than eight percent of the total number of vessels in the world commercial fleet, account for approximately one-half of the gross tonnage.[5]

Unfortunately, the same frequencies occupied by vessel noise are also used by many marine species, including the baleen whales, most of which are already listed under various international agreements as vulnerable, threatened, or endangered. The concern is that shipping noise may have long-term, population-level impacts on these species, which, given what is known of their sound production and ecology, are thought by some specialists to rely on low-frequency sound for communication over vast distances.[6]

Because of the importance of undersea noise to marine mammals, fish, and other marine resources, it is imperative that the EIS/EIR for this project incorporate the rigorous, objective analysis demanded by NEPA and CEQA with respect to these impacts. Unfortunately, the DEIS/EIR fails to meet this standard.

B. The DEIS/EIR Fails to Provide Sufficient Baseline Data on Noise to Support Its Conclusion About Significance

G535-4

Both NEPA and CEQA mandate that "significant environmental impacts" must be calculated by comparing the projected future impacts of the proposed project to the present level of impacts at a location without that project. For example, CEQA Guideline 15125 mandates:

> An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published or … at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will

[3] Engås, A., S. Løkkeborg, E. Ona, and A.V. Soldal, "Effects of seismic shooting on local abundance and catch rates of cod (Gadus morhua) and haddock (Melanogrammus aeglefinus)," *Canadian Journal of Fisheries and Aquatic. Sciences* 53 (1996): pp. 2238-2249.

[4] NRC, *Ocean Noise and Marine Mammals*.

[5] *Id.*; *see also* McCarthy, E., "Has Ambient Noise from Shipping Increased?" Presentation to the National Research Council Committee on Potential Impacts of Ambient Noise in the Ocean on Marine Mammals (2001). The NRC report suggests a correlation may exist generally between increases in tonnage and the rise of ambient vessel noise.

[6] *See, e.g.*, Croll, D., C.W. Clark, A. Acevado, B. Tershy, S. Flores, J. Gedamke, and J. Urbán, "Only male fin whales sing loud songs," *Nature* 417 (2002): p. 809; Payne, R., and D. Webb, "Orientation by Means of Long-Range Acoustic Signaling in Baleen Whales," *Annals of the New York Academy of Sciences* 188 (1971): pp. 110-41.

G535-4
Impacts BioMar-3 and -5 in Section 4.7.4 contain information on baseline underwater noise conditions. Section 4.20.3.7 discusses potential cumulative noise impacts on marine mammals from the proposed Project in conjunction with other offshore projects.

normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. G535-4 (cont'd)

See also CEQA Guideline 15126.2 (same). An EIS must employ a similar baseline under NEPA. With respect to ocean noise, however, the DEIS/EIR fails to provide an adequate baseline against which underwater noise impacts may be judged.

Nowhere in the section on "Noise Disrupting Marine Mammal Behavior," for example, does the document discuss current ocean noise levels impacting marine mammal populations in the area, either quantitatively or even qualitatively. DEIS/EIR at 4.7 51-55. It does not discuss, *e.g.*, the significant noise contributed to the project area by the nearby commercial shipping lanes heavily used by vessels heading into the ports of Long Beach and Los Angeles, along which roughly 17 tankers travel every day near the project area.[7] According to a recent report on anthropogenic noise in the nearby Channel Islands National Marine Sanctuary (or CINMS), this rate of vessel traffic together with "the low attenuation rate of the characteristic low-frequency sound emission [of ships], and an average ship passage rate of about 84 minutes" means that "CINMS ecology faces essentially incessant, cumulative exposure to ubiquitous large vessel traffic noise." *Id.* The FSRU is located just 2.5 nautical miles from the center of the nearest of these shipping lanes, and the subsea pipeline will be constructed directly under them. The DEIS/EIR cannot analyze the impacts of noise from the proposed project without discussing how the project's noise generation will interact with these baseline conditions.

Even where the document does discuss current offshore noise levels, it does so in a manner meaningless for evaluating undersea noise impacts. Elsewhere, the DEIS/EIR contains a two-sentence mention of current noise levels offshore, stating that "the existing sound levels 12.2 nautical miles . . . offshore vary depending on weather conditions and ship traffic," and quoting a different EIS as characterizing "the area's average baseline noise levels at 50 to 55 dBA." DEIS/EIR at 4.14-2. These numbers are useless for the purpose of evaluating the significance of project noise impacts on marine mammals and other sea life, however, because nothing suggests that they refer to underwater, as opposed to air, noise levels.[8] G535-5

Without setting forth and assessing the levels of undersea noise currently impacting the marine resources of the project area, the DEIS/EIR cannot properly analyze the additive effect of the noise to be contributed by the proposed project. Nor can the DEIS/EIR come to valid conclusions about the significance of expected noise impacts, absent an understanding and discussion of baseline conditions. Its findings that noise impacts on marine mammals and fish will be "less than significant," *see* DEIS/EIR at 4.7-39 and 54, are therefore insupportable. G535-6

[7] Shiva Polefka, "Anthropogenic Noise and the Channel Islands National Marine Sanctuary: How Noise Affects Sanctuary Resources, and What We Can Do About It," at 13 (Santa Barbara: September 2004). Because of its strong findings on the threat of anthropogenic noise to the resources of the Channel Islands National Marine Sanctuary, this report has been forwarded to the Channel Islands National Marine Sanctuary Manager by the Sanctuary Advisory Council for formal consideration.

[8] We further note that when this two-sentence reference to the area's noise levels is repeated in a section on noise impacts to fish, its uncertain application to underwater or air noise levels makes its inclusion there unhelpful and confusing.

G535-5
Impacts BioMar-3 and -5 in Section 4.7.4 contain information on both underwater natural background noise levels and underwater noise generated from construction and operations.

G535-6
Section 4.7 contains updated text on this topic, and Impacts BioMar-3 and -5 contain additonal information on the background underwater noise levels, the estimated underwater noise levels generated by Project construction and operations, and the effects of Project-related noise on marine mammals and fish.

C. The DEIS/EIR Fails to Provide Sufficient Detail about the Project's Generation of Underwater Noise

G535-7

The DEIS/EIR contains a four-page discussion entitled "Noise Disrupting Marine Mammal Behavior" and another three-quarter-page discussion of noise impacts to fish. *See* DEIS/EIR at 4.7-39, 51-54. Despite its superficial recognition of the need to analyze undersea noise impacts, however, the DEIS/EIR fails to provide sufficient (or almost any) detail about undersea noise to be generated by the proposed project. Instead, the document delivers a generic summary of some existing research on the characteristics and impacts of undersea noise, without any project-specific discussion or analysis. This is clearly insufficient to meet NEPA and CEQA requirements for an analysis of the project's environmental impacts.

Based on the project description, it is reasonable to assume that several phases of this project will generate significant underwater noise. For example, the construction of the Floating Storage and Regasification Unit, the construction of the undersea pipelines to shore, and the continued long-term operation of large commercial vessels bringing LNG to the port will all create undersea noise. This noise, as summarized above, will likely affect marine mammals, fish, and other marine resources in the region. Yet the section of the DEIS/EIR entitled "Noise Disrupting Marine Mammal Behavior" contains almost no detail about what exactly the project's generation of underwater noise will be.

Instead, what's presented in that section is a fourteen paragraph lecture on the general issue of marine mammals and noise, with only one paragraph (at DEIS/EIR 4.7-52) containing information specific to the Cabrillo port project. That paragraph contains some projected decibel levels for the operation of the FSRU, but it fails to analyze what impact this noise generation will have on marine resources. Moreover, the section fails altogether to estimate noise generation levels or frequencies for all other phases of the Cabrillo port construction and operation, including FSRU construction, undersea pipe-laying, and ongoing LNG tanker operation.

To see how inadequate this discussion of undersea noise generation is, one need only compare it to the discussion of noise impacts on people contained at DEIS/EIR 4.14 (which analyses the generation of noise levels in air). That section contains, for example, a table summarizing eleven different pieces of construction equipment used in horizontal directional drilling, stating, for each piece, the number to be used, the average load expected for each piece, and the estimated received noise level for each piece at 50, 100, 250, 500, 1,000 and 2,500 feet from the device. *See* DEIS/EIR Table 4.14-5, "Construction Noise from HDD." A similar table is included for the thirty pieces of equipment to be used for trenching activities. *See* DEIS/EIR Table 4.14-6. In all, the section on noise impacts to people is eighteen pages long, and its level of detail helps reveal the infirmities of the document's analogous undersea noise analysis.

In short, it is not enough to talk generally about impacts of noise without engaging in project-specific analyses of noise levels and impacts. The DEIS/EIR must be revised to speak meaningfully to the issue of undersea noise and marine resources in order to satisfy CEQA and NEPA's call for a "full and fair discussion of significant environmental impacts." 40 C.F.R. § 1502.1.

G535-7
See the responses to Comments G535-3, -4, -5, and -6. Impact BioMar-5 in Section 4.7.4 contains updated information on noise impacts on marine mammals.

D. The DEIS/EIR Fails to Address Adequately the Cumulative Impacts of Noise

G535-8

As part of an EIS's "full and fair discussion of significant environmental impacts," 40 C.F.R. § 1502.1, the document must take account of the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future significant actions." *Id.* § 1508.7. CEQA contains similar cumulative effects requirements. Here, the DEIS/EIR fails to include adequate information about current and projected man-made underwater noise levels in the project area to permit an adequate cumulative effects analysis.

For example, the DEIS/EIR fails to analyze the cumulative impact of this project together with existing ship traffic noise generated by the nearby commercial shipping lanes. Though the DEIS/EIR states that "[p]otential cumulative impacts from the proposed Project include the effects of additional vessel or aircraft noise on marine mammals," it fails to provide any quantitative or qualitative discussion of the levels of noise that are currently generated by the nearby shipping lanes. *See* DEIS/EIR at 4.20-18-19. It also fails to provide any analysis of the effect of reasonably foreseeable growth in this shipping noise over the near future, despite the fact that the main ports served by these shipping lines, Los Angeles/Long Beach and San Francisco, are respectively the first and third busiest ports for container ship arrivals in the U.S. and are projected to increase their containership arrivals by 5-10% *per year* over the next ten years.[9] As mentioned above in the discussion of noise baselines, a report on the problem of undersea noise recently concluded that the nearby Channel Islands National Marine Sanctuary "faces essentially incessant, cumulative exposure to ubiquitous large vessel traffic noise."[10] One cannot properly analyze the noise impacts of the proposed project without considering this context.

Nor does the DEIS/EIR adequately discuss the cumulative effect of noise generated by this project with noise generated by recreational boating in the area, military activities offshore (including but not limited to testing and training activities associated with the Point Mugu Sea Range and the Southern California Operations Area range complex), or oil and gas exploration and development activities off the coast. Instead, the entire cumulative effects analysis of impacts to marine mammals is limited to three paragraphs, much of which summarizes generic research on noise or gives conclusory statements of non-significance. No frequency levels or decibel numbers specific to this project area are provided, no analysis of sound propagation in this area is attempted, and no attempt is made to account for the way noise from these various sources will overlap.

A thorough cumulative impacts analysis is especially important to understanding the harm that may be caused by undersea noise generated by the proposed project. In reporting that there is "now compelling evidence implicating anthropogenic sound as a potential threat to marine mammals" at both the "regional and ocean scale levels," one of the most prominent scientific bodies studying the status of whale populations worldwide, the

[9] *See* Wignall, D. and M. Womersley, "Shipping Volumes, Routings and Associated Trends." (British Maritime Technology Asia Pacific, Singapore, 2004). Presentation given at *Shipping Noise and Marine Mammals*, May 17, 2004. Arlington, Virginia, USA (available at http://www.shippingnoiseandmarinemammals.com/NOAAMaterials.cfm).

[10] Shiva Polefka, "Anthropogenic Noise and the Channel Islands National Marine Sanctuary: How Noise Affects Sanctuary Resources, and What We Can Do About It," at 13 (Santa Barbara: September 2004).

G535-8
Section 4.20.3.7 has been updated with additional information on this topic. See also response to Comment G535-4.

Scientific Committee of the International Whaling Commission, has recently stressed the significance of cumulative effects from acoustic activities. International Whaling Commission, Report of the Scientific Committee to the International Whaling Commission, at Annex K § 6.4 (2004). The Committee found that evidence of increased sound from several different sources, including military sonar, ships and seismic activities, was "cause for serious concern." *Id.* at § 12.2.5.1. The Committee also noted "the potential for cumulative or synergistic effects of sounds . . . with non-acoustic anthropogenic stressor." *Id.*

G535-8 (cont'd)

These concerns highlight the importance of considering not just the cumulative effects of various sources of noise on the natural resources of the area, but also the synergistic effects of acoustic impacts together with other environmental stressors. Thus, the DEIS/EIR must also consider noise impacts in light of current and reasonably foreseeable future environmental stressors such as chemical and biological pollution, habitat degradation, fishing bycatch, and ship strikes. Only by analyzing these impacts together – by considering, for example, how they may cumulatively compromise biologically important activities by elevating stress, masking relevant sounds, and altering behavior – can the decisionmakers and the public reach a full understanding of the environmental consequences of this proposed project. The DEIS/EIR's cumulative impacts analysis falls woefully short of this standard.

E. The Proposed Mitigation Measures for Undersea Noise Are Inadequate

G535-9

The DEIS/EIR identifies two mitigation measures to lessen the impact of project noise on marine mammals, both proposed by the applicant. *See* DEIS/EIR at 4.7-49, 54. In a nutshell, the mitigation measures consist of (1) limiting construction phase operations to summer and fall, when gray whales are not migrating past the site, and (2) requiring marine mammal observers on board construction- and operation-phase vessels. These two mitigation measures are insufficient for at least the following reasons.

First, for the reasons stated above, the DEIS/EIR greatly underestimates the impacts of noise on marine resources, especially the cumulative impact of this noise with other anthropogenic noise in the area. Because the DEIS/EIR fails to analyze these impacts sufficiently, it fails to find significant environmental impacts where they exist and, consequently, fails to identify measures to mitigate those environmental impacts. For example, in concluding that there are no significant cumulative impacts of this project together with other vessel noise in the area, the DEIS/EIR fails to discuss or take into account the heavily-used shipping lanes just two nautical miles from the project site. *See supra* at section I.D; DEIS/EIR at 4.20-18-19. Once this oversight is corrected, it may become apparent that additional construction- and operation-phase mitigation measures are required.

Second, the mitigation measures themselves are ineffective. While we applaud the decision to avoid construction-phase activities during gray whale migration season and believe that such seasonal restrictions are absolutely necessary to prevent interference with the ongoing recovery of this once-endangered and iconic population of animals, we note that gray whales are just some of the many marine mammals and other marine resources in the project area that are highly sensitive to man-made noise. Yet noise impacts from year-round operations (including noise from LNG vessels and the FSRU) and noise impacts from

G535-9
Impacts BioMar-3 and -5 in Sections 4.7.4 and 4.20.3.7 have been revised since the issuance of October 2004 Draft EIS/EIR and contain additional information on the impacts of noise on the marine environment. Mitigation measures, including BioMar-5a, -5b, and -5c, have been added to reduce noise impacts.

G535-9 (cont'd)

construction operations during the summer and fall remain essentially unmitigated under the proposed scheme.

This is because the second mitigation measure, referred to as "AMM BioMar-9b," is toothless. Though it requires "two qualified marine monitors to provide a 360-degree view and watch for and alert vessel crest of the presence of marine mammals during construction activities," it does not require that crews respond to the presence of marine mammals with any *action* aimed at lessening noise impacts. DEIS/EIR at 4.7-49. When whales are sighted, for example, monitors are instructed to "*request*" that vessel operators remain 1,000 feet away from the whales—but nothing in the protocol requires operators to stay outside that zone. Nor does the protocol require work to stop or lessen when whales are sighted, meaning that noise generation would continue—even if that noise is certain to have significant impacts outside the suggested 1,000-foot exclusion zone. Likewise, although monitors have "the *authority*" to stop work when marine mammals are in danger, nothing mandates or requires them to do so. *Id.* These toothless provisions violate CEQA's requirements that mitigation measures "must be fully enforceable." CEQA Guidelines section 15126.4. G535-10

The protocol's application to pipe-laying operations is also flawed, and it appears directed only at avoiding collisions, not noise impacts. Though monitors are required on board pipe-laying vessels, their only mandate is to take certain actions "if a collision is likely . . . so that appropriate actions can be taken to avoid collisions." DEIS/EIR at 4.7-50. Nothing in the protocol is aimed at lessening construction noise when whales or other marine mammals, sea turtles, or other sensitive resources are nearby. G535-11

Common-sense and effective mitigation measures exist to lessen the impact of construction and operation noise on marine resources. These include employing quiet-ship technology on all construction vessels, requiring meaningful operation restrictions in the presence of marine mammals, ceasing operations when sea and weather conditions prevent effective visual monitoring, and many other feasible measures. CEQA requires that the DEIS/EIR discuss feasible mitigation measures, as well as the basis on which some measures are selected over more effective ones. CEQA Guidelines section 15126.4. A revised DEIS/EIR is therefore required to improve the discussion of mitigation measures for undersea noise. G535-12

II. The DEIS/EIR Fails To Adequately Analyze and Mitigate the Significant Air Quality Impacts of the Project

G535-13

The DEIS/EIR estimates that operation of the Project alone will generate every year over 187 tons of oxides of nitrogen (NOx), 50 tons of reactive organic compounds (ROC), 162 tons of carbon monoxide (CO), and nearly 15 tons of fine particulate (PM10).[11] The projected levels of NOx and ROC trigger a conformity analysis under the Clean Air Act, DEIS/EIR, at 4.6-10-11, and are considerably above the significance threshold levels for NOx and ROC in Ventura County (which has a significance threshold of 25 tons per year for

[11] As discussed below, the only emissions estimates provided in the DEIS/EIR incorporate emissions reductions from proposed mitigation measures.

G535-10
AM BioMar-9b in Section 4.7.4 has been revised to specify that the marine mammal monitors would follow MMS Notice ot Lessees NTL No. 2004-G01 guidelines and the Marine Mammal Monitoring Protocols. In addition, it specifies the times when monitoring would be required.

Section 4.3.4 contains information on potential impacts associated with the increased vessel traffic due to the proposed Project and mitigation measures to address such impacts.

G535-11
Impacts BioMar-3 and -5 in Section 4.7.4 contain updated information on noise impacts during offshore construction and mitigation measures that would be implemented to reduce noise impacts in the marine environment. AM BioMar-9b, Marine Mammal Monitoring, includes the responsibilities of qualified monitors approved in advance by NOAA Fisheries and the USFWS in consultation with the California Department of Fish and Game.

G535-12
Section 4.7 has been updated with additional analysis and revised mitigation since issuance of the October 2004 Draft EIS/EIR.

G535-13
In March 2006, the USCG and MARAD solicited public input on a Draft General Conformity Determination, which concluded that NOx emissions generated from Project construction activities in Los Angeles County were subject to the General Conformity Rule. All other Project-related emissions were determined not to be subject to the General Conformity Rule. Subsequent to the issuance of the Conformity Determination, the Applicant provided a written commitment that all onshore pipeline construction equipment would, to the extent possible, utilize engines compliant with USEPA Tier 2, 3, or 4 non-road engine standards with Tier 2 being the minimum standard for any engine.

Project emissions were then reanalyzed to assess the potential emission reductions associated with the stated commitment and to reassess the applicability of the General Conformity Rule. The revised General Conformity analysis concluded that all applicable Project emissions would be less than *de minimis* thresholds in both Ventura and Los Angeles Counties and, therefore, not subject to the General Conformity Rule. Based on this conclusion, the USCG and MARAD will not finalize the Draft General Conformity Determination.

Section 4.6.1.3 and Section 4.6.2 contain revised Project emission estimates and a revised discussion of the applicability of the General Conformity Rule to the Project, respectively. Appendix G4 contains a copy of the revised General Conformity analysis.

Section 4.6.4 discusses the health effects attributed to air pollutants and included revised impacts and mitigation measures.

G535-13 (cont'd)

NOx and ROC) and Los Angeles County (which has a significance threshold of 10 tons per year NOx and ROC). *See id.* at 4.6-4.[12]

Emissions of NOx and ROC interact with sunlight to produce ozone, or smog. Smog contributes to decreased lung function, asthma, and chronic respiratory illnesses such as emphysema and chronic bronchitis. Further, PM10 can travel deep into the lungs, and result in impaired lung function, chronic respiratory illnesses, and premature death. As discussed below, a careful review of the DEIS/EIR reveals that the document fails to adequately analyze and mitigate the air quality impacts from the Project.

A. The DEIS/EIR' Analysis of Air Quality Impacts is Inadequate

1. The DEIS/EIR Fails to Quantify the Emissions Generated From the Construction and Operation of the Project

G535-14

The only emissions estimates provided in the DEIS/EIR incorporate emissions reductions from the document's purported mitigation measures. *See* DEIS/EIR at Tables 4.6-2 and 4.6-3; *see also e.g.*, *id.* at 4.6-13 (noting that mitigation measures for construction emissions "[have] been accounted for in these emissions estimates in Table 4.6-2"); *id.* at 4.6-14 (noting that use of best available control technology to limit stationary source emissions "is accounted for in Table 4.6-3"). This is improper for several reasons. First, failing to disclose the total emissions generated by the Project *before* mitigation deceptively minimizes the Project's significant air quality impacts and precludes the public from understanding the full magnitude of the Project. Second, it precludes the public from determining whether the DEIS/EIR properly quantified emissions from the Project. Third, it requires the public to "trust" that the DEIS/EIR made the correct emissions reductions based on the mitigation measures proposed, and properly concluded that all air quality impacts could be mitigated to a level "less than significant" or "Class III." *See id.* at ES-44-45. Indeed, without the ability to compare data reporting the total emissions generated by the Project to data reporting total emissions after mitigation, the public cannot evaluate whether the document overestimated the efficacy of its mitigation measures. This oversight alone mandates a revised DEIS/EIR.

2. The DIER/EIS Underestimates Emissions Impacts

G535-15

The DEIS/EIR provides little, if any, data on how construction or operational emissions estimates were calculated. Moreover, a close examination of the estimates provided reveals that the DEIS/EIR underestimates emissions for generators, submerged combustion vaporizers (SCV), vessels, and tug boats.

For example, the DIER/EIS contemplates using main generators manufactured by Wartsila, and projects NOx emissions from the use of such equipment to be 13.82 tons per year (after mitigation). *See id.* at Table 4.6-3. However, we believe that the emissions from these engines are seriously understated, by at least 50%, and request that the DEIS/EIR be revised to include precise calculations of how these emissions were calculated (prior to mitigation), and specify all assumptions made for this analysis. The DEIS/EIR must include accurate and documented emissions from this source category.

[12] Ventura County is designated as a severe nonattaninment area for ozone (O3), and exceeds the State's PM10 air quality standard. Los Angeles County is designated as a nonattainment area for O3, PM10 and CO.

G535-14

The Project has been modified since issuance of the March 2006 Revised Draft EIR. See Section 1.4.2 for a summary of Project changes. The following Project changes would reduce emissions of nitrogen oxide and other air pollutants:

- Reduction in the number of LNG carriers and change in crew vessel trips;
- Use of natural gas to power LNG carriers in California Coastal Waters;
- Diesel-fueled support vessels with emission controls; and
- Use of specific engine standards for onshore construction equipment.

The Applicant has committed to implement the following additional measure to reduce air emissions:

- Repowering of existing non-Project vessels with cleaner-burning engines.

These changes required revisions to air pollutant emission estimates and related air quality analyses.

Section 4.6.1.3 contains revised information on Project emissions and proposed control measures. Section 4.6.4 contains revised information on Project impacts and mitigation measures. These revisions address the concurrent emission of ozone precursors from the FSRU and Project vessels. Section 4.6.1.3 contains revised information on Project emissions and proposed control measures. Section 4.6.4 also discusses the health effects attributed to air pollutants.

G535-15

The USEPA Region 9 issued a draft Proposed Authority to Construct (i.e., draft air permit-to-construct) for the Cabrillo Port FSRU. Condition V.A.1 of the draft air permit-to-construct contains specific emission limits on air pollutant concentrations in exhaust from the Wartsila Generators (with control equipment) and Submerged Combustion Vaporizers (SCVs). These limits do not vary with equipment load. Thus, the effective limits on allowable air pollutant mass rates (in terms of pounds per hour) would decrease with lower equipment loads. Condition VI.B of the draft air permit-to-construct contains specific stack testing and/or continuous emission monitoring requirements for air pollutant emissions from the Wartsila Generators (with control equipment) and SCVs.

See the response to Comment G535-14. Appendices G1 through G8 contain supplementary material that provides the air quality analysis methodology and the derivation of the emissions estimates.

G535-15 (cont'd)

Further, the projected emissions from the use of SCVs seem particularly low, especially given the limited mitigation measures proposed to control emissions from this source. *See id.* at Table 4.6-3; 4.6-14. Accordingly, the DEIS/EIR should be revised to explain how emissions were quantified for this source, what emissions factors were used, what assumptions were made, and what reductions were assumed for the mitigation.

G535-16

Moreover, without further data substantiating the DEIS/EIR's assumptions regarding vessel and tugboat emissions, the document appears to underestimate emissions from these sources as well. The DEIS/EIR states that all LNG carriers supplying the FSRU will "be fueled solely with LNG." *Id.* at 4.6-16. While we are pleased that the Project proponent is prepared to fuel its LNG carriers with 100% LNG, this measure must be included as a specific element of the Project (and not just an assumption) in order to take full credit for this mitigation measure.

G535-17

In addition, the DEIS/EIR states that "[t]he emissions calculations for supply and support vessels are based on the use of low-sulfur diesel (California diesel) or natural gas, when feasible." *Id.* However, the use of such fuels by supply boats and tug boats is not a listed mitigation measure for the Project, *see id.* at 4.6-12, and the DEIS/EIR does not state how the applicant intends to guarantee the use of these specified fuels. In fact, the use of the phrase "when feasible" suggests that the use of cleaner fuels is not guaranteed. The use of low sulfur diesel fuel or natural gas by all supply and support vessels is an important mitigation measure, and we urge the DEIS/EIR to incorporate this measure as an express element of the Project. Indeed, CARB estimates that using even 3,000 part per million (ppm) sulfur instead of the traditional 27,000 ppm sulfur bunker fuel will yield approximately a 90 percent reduction in SOx emissions, and a 63 percent reduction in PM emissions. *See Harboring Pollution: Strategies to Clean Up U.S. Ports*, at 27 (a copy of the report is enclosed). However, if the use of low-sulfur diesel or natural gas by vessels and tug boats is *not* made a required element of the Project, then the emissions estimates for these sources must be revised to reflect the use of bunker fuel, which is more commonly used, and which the DEIS/EIR acknowledges is more polluting. *See* DEIS/EIR at 4.6-16.

Lastly, to justify the DEIS/EIR's low SO2 air emissions estimates, the document states that the Project's LNG will be "virtually sulfur-free." *See id.* at 4.6-14. Again, use of "sulfur-free" LNG is commendable, but in order to base emissions estimates on this level of sulfur content, the DIER/EIS needs to contain documentation to substantiate this assertion, and to make this a specific mitigation measure of the Project.

3. The DEIS/EIR Fails to Discuss the Project's Air Quality Impacts on the Region Under the Jurisdiction of the South Coast Air Quality Management District

G535-18

The DEIS/EIR specifies that the Project will be physically located offshore of the coast of Ventura County and Los Angeles County. *See id.* at 2-2. The DEIS/EIR also specifies that emissions from the Project will be generated in both Los Angeles and Ventura counties, *see id.* at 4.6-4, and that prevailing northwesterly sea winds in the region will likely impact the South Coast Air Basin air shed. *See id.* at 4.1-12. However, the DIER/EIS fails to fully discuss the Project's air quality impacts on the South Coast Air Basin. Further, while the Project will fall subject to "off shore" rules, we are concerned that it is escaping mitigation that would otherwise apply to on-shore projects. These rules that would

G535-16
The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Tugs and crew vessels would have diesel engines equipped with air pollution control technology that would result in emissions comparable to emissions from natural gas-fueled engines.

G535-17
The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Sections 4.6.1.3 and 4.6.4 contain information on regulated air pollutant emissions and an updated analysis of vessel emissions.

Section 4.6.2 contains revised information on the regulations that require the use of ultra low sulfur diesel.

G535-18
The Project has been modified since issuance of the March 2006 Revised Draft EIR. See Section 1.4.2 for a summary of Project changes. Section 4.1.8 contains a detailed description of the marine climatic setting. Section 4.6.1.2 has been revised to provide an expanded discussion of the potential transport of offshore air pollutant emissions to onshore areas due to meteorological conditions. Section 4.6.4 contains revised analyses of the impacts on air quality from the emissions of criteria pollutants, ozone precursors, and toxic air pollutants from the FSRU and Project vessels.

otherwise apply should be fully discussed, and the DEIS/EIR should discuss whether any of the mitigation in these rules should be applied to this Project.

B. The DEIS/EIR's Consideration of Mitigation Measures for Air Quality Impacts is Inadequate

1. The DEIS/EIR Improperly Defers Mitigation

G535-19

To conclude that construction and operational air quality impacts will be mitigated to a level "less than significant," the DEIS/EIR relies almost entirely on measures set forth in the "conformity analysis" that has not yet been conducted, offset requirements "to be negotiated," and the implementation of a construction emissions plan "to be developed." *See* DEIS/EIR at 4.6-13 - 4.6-21. The DEIS/EIR's deferral of the formulation of mitigation is improper. *See, e.g., Sundstrom v. County of Mendocino*, 202 Cal. App. 3d 296, 307 (1988).

In fact, the deferral of mitigation is particularly egregious here because the document assumes that Project emissions will be mitigated to a level "less than significant." *See* DEIS/EIR at Table ES-1. In *Sundstrom*, the court held that a negative declaration was insufficient because the lead agency based its environmental review on the presumed success of mitigation measures that had not been formulated at the time of project approval, and found that the agency had no basis for finding that the project's impacts will be less than significant. *See id.* at 306-7. Like the environmental document in *Sundstrom*, the DEIS/EIR is similarly inadequate.

2. The Mitigation Measures Proposed in the DEIS/EIR are Inadequate

G535-20

The DEIS/EIR's analysis of air quality mitigation measures is inadequate for several reasons. First, the DEIS/EIR proposes as mitigation that the applicant comply with offsets negotiated with USEPA Region IX, and offset requirements negotiated with the VCAPCD new source review rule. *See* DEIS/EIR at ES-22, 4.6-15. However, the DEIS/EIR fails to include any discussion of the level of offsets required or the kind of offsets that will be obtained to mitigate impacts from the Project. This must be resolved and discussed in the DEIS/EIR before the Project is considered for approval.

G535-21

Second, additional feasible mitigation measures exist that could further mitigate stationary source emissions. For example, the DIER/EIS states that "regulated pollutants (including criteria and hazardous) could be emitted above regulatory standards for a long term during normal operations for the FSRU." *Id.* at 4.6-14. In response, the document proposes to address this impact by using selective catalytic reduction (SCR) to control NOx emissions generated by the primary internal combustion engines, and catalytic oxidation to control CO and ROC. *See id.* at 4.6-14. While these are effective technologies for the reduction of pollution, the document specifies that for SCV, only low-NOx burners would be used to minimize NOx formation. *Id.* SCR should be used to control NOx emissions from SCVs as well.

G535-19
The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Section 4.6.1.3 contains revised information on Project emissions and proposed control measures. Section 4.6.4 discusses the health effects attributed to air pollutants and includes revised impacts and mitigation measures.

G535-20
Impact AIR-4 and Impact AIR-5 in Section 4.6.4 have been revised to provide specific information regarding the Applicant's emissions reduction programs and their review by the USEPA and the California Air Resources Board (CARB). As part of air permit-to-construct application procedures, the Applicant has committed to the USEPA to achieve emissions reductions (in addition to reductions inherent to the Project) to an amount equal to the FSRU's annual NOx emissions. The Applicant has executed contracts to retrofit two marine vessels (long haul tugs) by replacing the propulsion engines of each vessel with modern low emitting engines (Tier 2 compliant diesel-fired engines). At the request of the USEPA and the CARB, the Applicant conducted source testing to assist in determining the emission reductions expected as a result of the retrofits. Both the USEPA and the CARB have reviewed the results, but there is not yet a consensus on the estimated emission reductions from the mitigation proposal.

Based on the USEPA's and CARB's estimates, the proposed Emissions Reduction Program (AM AIR-4a) would provide for NOx emission reductions greater than the estimated annual NOx emissions from FSRU equipment and estimated NOx emissions from operation of LNG carrier offloading equipment. However, the total emission reductions would be less than the annual NOx emissions estimated for all operations (FSRU and Project vessels) in California Coastal Waters, as defined by the CARB. According to CARB, the emission reduction proposal "represents more than what would otherwise be required by the current determination of applicable regulations."

Appendix G9 contains a memorandum from the CARB to the CSLC on this topic. Electronic copies of the Applicant's reports submitted to the USEPA that detail the tug retrofits and related emission reductions are available at www.epa.gov/region09/liq-natl-gas/cabrillo-air.html.

G535-21
An emission control technology analysis prepared by the Applicant concluded that the use of selective catalytic reduction (SCR) has

not been achieved in practice in a floating marine environment. The Applicant submitted the emission control technology analysis to the USEPA as part of the air permit application for Cabrillo Port. Air permit application materials for Cabrillo Port are available at the USEPA's website.

III. Conclusion

G535-22

The decision to construct and operate California's first offshore LNG import facility should not be taken lightly. Under NEPA and CEQA, the decision must not be taken without first ensuring that both the public and decisionmakers have the information they need to make an informed choice about the project. For all the reasons discussed here and in the referenced and incorporated EDC comment letter, the DEIS/EIR that has been produced for this project fails to satisfy this standard. We therefore strongly urge the USCG, MARAD and CSLC to revise this document and allow the public sufficient time to provide written comments and testimony at a public hearing regarding the revision. In addition, we reiterate our call, expressed in our letter of December 8, 2004, for a suspension of the Deepwater Port Act timeline for the Project in order to allow government agencies adequate time to gather essential information missing from the DEIS/EIR.

Thank you for your consideration of these comments.

Very truly yours,

Cara Horowitz
Project Attorney

Melissa Lin Perrella
Project Attorney

Encl. (hard copy only)

G535-22
See the response to Comment G535-1.

Your statement is included in the public record and will be taken into account by decision-makers when they consider the proposed Project.

G535-23

G535-23
This attachment is a copy of a letter that was submitted on behalf of the Statewide LNG Environmental Stakeholder Working Group. Responses to the comments from that letter are identified in this document as 2004 Comment Letter G518.

Statewide LNG Environmental Stakeholder Working Group

December 8, 2004

Commandant Thomas H. Collins
U.S. Coast Guard
2100 Second Street, S.W.
Washington, D.C. 20593

William G. Schubert, Administrator
Maritime Administration
U.S. Department of Transportation
400 7th Street, SW Room
Washington, D.C. 20590

RE: Cabrillo Port Liquefied Natural Gas Deepwater Port – Request for Suspension of Time Limits to Gather Information Missing in Draft EIS/R

Dear Commandant Collins and Administrator Schubert,

This letter is sent on behalf of the Statewide LNG Environmental Stakeholder Working Group, which consists of over 25 local, state, and national environmental groups. This group has formed to address the issue of the importation, regassification, and reselling of LNG via onshore or offshore LNG plants in California and Baja, California, and out of mutual concern for the character and pace of the LNG debate.

We are writing to request a suspension of the Deepwater Port Act timeline for the Cabrillo Port Liquefied Natural Gas ("LNG") project in order to allow the agencies time to gather information missing from the Draft Environmental Impact Statement/Report ("DEIS/R") that is essential to conducting a thorough and accurate environmental review. Because the missing information is necessary for processing the Cabrillo Port application within the time limit set by the Deepwater Port Act, we request that the Commandant recommend to the Administrator of the Maritime Administration ("MARAD") that the Administrator suspend the time limit for processing the application pursuant to 33 CFR § 148.107(c).

The groups that make this request share a common goal of ensuring full agency and public review of any LNG projects proposed to import natural gas to California. Since this is the first DEIS/R for an LNG project in California and, most importantly, the first environmental review in the world for an *offshore* LNG project, it is critical that this document contain all information essential for making an informed decision about LNG in California. Unfortunately, the draft report lacks the necessary information to ensure adequate public and agency review.

The list compiled below reflects the specific areas in which the DEIS/EIR is missing critical information.

I. Description of the Proposed Action

The DEIS/R fails to disclose all phases of the proposed action, and thus fails to evaluate all of the action's environmental consequences. In particular, the DEIS/R does not evaluate the production of gas and shipment of LNG in international waters. NEPA regulations require that the DEIS/R consider all phases of the action, including connected actions that are interdependent parts of a larger action and depend on the larger action for their justification. 40 CFR § 1508.25(a)(1)(iii).

The description of the proposed action lacks important details regarding the action's effect on biological resources, including the actual alignment of the onshore gas pipeline and a disclosure of which of the identified ACOE wetlands (and the non-jurisdictional state wetlands the DEIS/R does not address) would be trenched and which would be drilled under (HDD). The lack of clear description also affects the DEIS/R's ability to evaluate and mitigate impacts to oak trees (p.4.8-42), other vegetation, and wetlands.

II. Alternatives

The DEIS/R fails to include any alternative to the proposed action other than the No Project Alternative that reduces impacts beyond those associated with the proposed action. The DEIS/R must evaluate a reasonable range of alternatives to the proposed action, including an environmentally preferable alternative. 40 CFR § 1505.2(b).

III. Impact Analysis

A. Project Life Cycle

The DEIS/R fails to include an analysis of the entire life cycle of the proposed action. The DEIS/EIR fails to analyze impacts associated with extraction of the gas, production, processing, liquefaction, and tankering the LNG to the port.

B. Environmental Setting/Baseline

The DEIS/R does not adequately describe the existing environmental setting or establish an environmental baseline. As discussed below in greater detail, sensitive species surveys and mapping were not undertaken and have been deferred to a later time. Thus, the DEIS/R fails to include essential information for evaluating the proposed action's environmental effects.

C. Safety

Consequence Modeling: The consequence modeling used to calculate the exclusion zones for the various LNG spill scenarios in the DEIS/R is fatally flawed. Without justification, the DEIS/R uses a vapor dispersion and thermal radiation consequence modeling program that is

inappropriate for LNG. The DEIS/R should have utilized a modeling system that was designed for LNG, such as the methodologies designed and approved by the Federal Energy Regulatory Commission. This omission corrupts the entire safety analysis. The missing modeling information is essential for evaluating the proposed action's effects on human health and safety.

D. Shipping

The transportation of LNG is so ill-defined in the DEIS/R as to leave no basis for rational consideration of this issue so critical to the safety of the proposed action.

- There is no information in the DEIS/R regarding the ship designs, options or contracts.
- The size of the ships, which will determine the quantity of gas to be shipped, and the number of shipments per week is indeterminate. The number of shipments is stated as "[t]wo to three per week" (p. 2-2, ln. 25-26.). The volume of gas ranges from "26.4 million gallons to 58.1 million gallons of LNG" (p. 4.2-20, ln. 3) (other references in the DEIS/R to volumes that are an order of magnitude smaller appear to be the result of a conversion error).
- No consideration has been given to a recognized hazard in insulation in the ship's hull, which has been identified as highly flammable.
- "In addition, the relatively large number of LNG carriers that could call at the FSRU (165 with an additional 85 on order)..." leaves the reader in doubt as to whether these are ships belonging to and ordered by the applicant, or whether the port will accept any and all ships regardless of flag of registry, an exceedingly lax and dangerous practice.

E. Air Quality

- The air pollutant emissions for mobile and stationary sources are significant and will require the purchase of emission credits. The DEIS/R fails to examine the feasibility of obtaining these credits.
- The DEIS/R fails to consider air pollution from secondary sources such as idling or detours of other vessels due to the exclusion zones and also during port construction.

F. Terrestrial Biological Resources

The DEIS/R does not evaluate the proposed action's effects on wetlands as defined by the state (California Coastal Commission and the Department of Fish & Game) and the US Fish and Wildlife Service. Only US Army Corps of Engineers (ACOE) wetlands are considered.

Some biological impact analyses, which should be integral components of the DEIS/R, are deferred because baseline conditions have not been recorded, because required surveys have not been performed, and/or because the description of the proposed action is vague. For instance, the DEIS/R does not include specific or meaningful analyses of impacts to trees (p. 4.8-42) or

riparian habitat (p. 4.8-43) because not enough is known about the proposed action or the baseline environment to determine even roughly how many trees, including native specimen oak trees, and acres of riparian habitat would be affected.

The DEIS/R further acknowledges (p. 4.8-36) that because a comprehensive botanical survey has not been conducted, "it is not known whether rare or special status plants along the proposed pipeline route are present." This survey information must be provided in the DEIS/R to enable a meaningful quantification and consideration of the proposed action's impacts, to allow design of appropriate mitigation measures and to allow comparison of alternatives. In addition, the DEIS/R defers the analysis of wetland impacts to the ACOE permitting process without disclosing the scope of the proposed action's wetland impacts.

G. Marine Biological Resources

The DEIS/R does not provide sufficient information regarding baseline environmental conditions, provides no studies of benthic infauna or epifauna that would be impacted by the proposed action, and includes no monitoring program to evaluate impacts on the marine environment and the effectiveness of mitigation measures. The DEIS/R states without support from any survey data that large numbers of birds and fish are not present at the FSRU site.

The DEIS/R does not adequately describe the lighting conditions of the proposed action or adequately evaluate the effects of this lighting on marine organisms.

Without any assessment or survey of larval abundance in the immediate area of the FSRU, the DEIS/R dismisses entrainment losses due to exchange of ballast water as insignificant. This is not appropriate given the relatively large volume of water that is to be exchanged daily (~14.5 MDG). The DEIS/R must provide sufficient survey data and information regarding ballast water intake velocities to allow consideration of potential entrainment impacts.

H. Land Use and Policy Consistency

The DEIS/R lists but does not analyze the proposed action's consistency with specific plans, policies and regulations. Instead, the report expressly defers analysis of the proposed action's consistency with the California Coastal Act. As a result, the DEIS/R fails to consider or identify land use impacts related to conflicts with plans and policies, even though this is listed as a threshold for triggering a significant impact.

IV. Mitigation Measures

The DEIS/R defers the formulation of mitigation measures for specific impact until after the record of decision, including mitigation measures for biological impacts and air quality impacts. For example, the Riparian Avoidance and Restoration provides no standards for determining when avoidance is feasible. Specific wetland mitigation measures are not provided. Additionally, alternative crossing methods for different waterways have not been determined and are being deferred to field decisions by SCE's construction engineers (p. 4.8-44) rather than